

AUSTRALIAN PLANT DISEASE RECORDER

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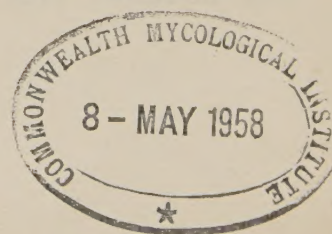
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For confidential circulation to plant pathologists in
Australia - PLEASE DO NOT ABSTRACT



STATE OF NEW YORKIN SENATEJanuary 10, 1905

REPORT
OF THE
COMMISSIONER OF THE LAND OFFICE
IN RESPONSE TO A RESOLUTION
PASSED BY THE SENATE
JANUARY 10, 1905

LAND OFFICE

ALBANY:
J. B. LEECH, PRINTING OFFICE,
188 NASSAU ST., N. Y. C.
1905

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CEREALS AND GRASSESTHE EFFECTIVENESS OF HOT WATER TREATMENT OF AGROSTIS TENUIS SEED
CONTAMINATED WITH THE NEMATODE ANGUINA AGROSTIS:

Organoid galls containing the second stage larvae of the floret infecting nematode Anguina agrostis (Steinbuch) Filipjev are frequently found admixed with imported Agrostis tenuis Sibth. (Bent grass) seed.

In a series of experiments designed to evaluate hot water treatment of contaminated seed, galls separated from bent grass seed were immersed for 10 minutes in water at each of the temperatures indicated in Table 1. A small quantity of seed was similarly treated. The percentage germination of the seed after 18 days and the survival of the larvae following the immersion period was noted.

TABLE 1.

Temperature of Immersion Water in °C	Percentage Germination of seed after 18 days**
25	85
30	85
40	84
45	82
*50	80
*55	59
*60	30
*70	5
*80	2
*90	2

* All larvae killed by treatment.

** Mean of 3 replications.

The results in Table 1 show that immersion of galls in water at 50° for 10 minutes was lethal to all larvae and reduced the seed germination from 85% to 80%.

GENERAL INFORMATION

THE SPECIMENS OF THE WATER SAMPLES AT THE FOLLOWING LOCATIONS

CONTAINED WITH THE WATER SAMPLES

Groundwater from the following locations was analyzed for the presence of the following substances: nitrate, nitrite, ammonia, and phosphate. The results of the analysis are given in the following table.

In a series of experiments designed to evaluate the effect of water treatment on the growth of the bacteria, it was found that the growth of the bacteria was significantly reduced in water treated with chlorine. A small amount of chlorine was added to the water, and the growth of the bacteria was observed. The results of the experiments are given in the following table.

TABLE I

Percentage Reduction of Bacteria		Concentration of Chlorine	
after 24 hours		in mg/l	
100	100	0.1	100
95	95	0.2	95
90	90	0.3	90
85	85	0.4	85
80	80	0.5	80
75	75	0.6	75
70	70	0.7	70
65	65	0.8	65
60	60	0.9	60
55	55	1.0	55

* All bacteria killed by chlorine.

** Mean of 3 replications.

The results in Table I show that the growth of the bacteria was significantly reduced in water treated with chlorine. The growth of the bacteria was observed in water treated with 0.1 mg/l of chlorine, and the growth was significantly reduced in water treated with 1.0 mg/l of chlorine.

CEREALS AND GRASSES (Cont'd)

The experiments involved only small quantities of seed in a relatively large volume of water, and thus the problem of heat penetration into a seed mass did not arise. A lower water temperature and a longer period of immersion would conceivably prove equally as lethal to the larvae and facilitate heat penetration of the seed mass.

These results were obtained during a general study of the Bent grass nematode carried out by the author in the Department of Plant Pathology of the University of Sydney.

- C.D. BLAKE

Department of Agriculture,
Sydney.

The experiments involve only a small quantity of water, as a relatively large volume of water, and the question of how penetration into a sand mass is affected. A lower water temperature and a longer period of immersion would obviously give results as far as the lower and lighter sand particles and the sand mass.

These results are not a complete study of the sand mass, but they are a step in the right direction. The results are given in the report of the University of Sydney.

- C. H. BAKER

Department of Agriculture,

Sydney.

FIELD AND FODDER CROPSBACTERIAL WILT OF RUSSIAN COMFREY:

A wilt disease of Russian Comfrey (Symphytum peregrinum Lodeb) which occurred recently at Redlands Experiment Station has been examined and found to be caused by the bacterium Pseudomonas solanacearum E.F. Smith.

Morphology, cultural characteristics, and biochemical reactions of the comfrey isolates conformed well with the description of Ps. solanacearum in Bergey's Manual (Breed et al 1948). Pathogenicity was demonstrated on comfrey, sunflower, tomato, and zinnia plants growing in the glasshouse.

A search of the literature has brought to light only one previous record of a bacterial disease of a plant of the genus Symphytum. This is a wilt of S. officinale, caused by Erwinia atroseptica, which is quite distinct from the disease described above.

- ELIZABETH A. MOXON

Department of Agriculture & Stock,
Brisbane.

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DISEASES OF GOLDEN TARES:

Golden Tares (Vicia sativa) are becoming popular as a leguminous crop providing winter feed when sod sown into pastures on the north coast of N.S.W. Satisfactory nodulation seems easy to obtain and, unlike the clovers, the crop has so far been little affected by the Amnemus weevil. Several diseases, however, have been recorded.

Most stands examined last season contained plants showing a die-back of someshoots and a streaking and blackening of the stems. Aphid populations were high and it is thought that the broad bean vascular wilt virus may have been responsible. Attempts to transmit the disease mechanically, however, have not yet been successful.

A rot caused by a Sclerotinia sp. has been recorded from Yanco and an extensive root and crown rot was observed at Raleigh. In the latter case some plants showed a pale rot from which Sclerotium rolfsii was isolated. Most plants, however, were suffering from a purplish-black root rot from which a species of Cylindrocladium was isolated and shown to be capable of reproducing the disease. This fungus produced a Calonectria stage in culture

This fungus does not appear to be quite the same as any of the eight previously described species of Cylindrocladium. Only one, C. ilicicola, has been found previously to have a perfect stage and this also is in Calonectria. Cylindrodadium scoparium, the species most commonly recorded, has been observed in other States and has a very wide host range and world-wide distribution.

- P.G. VALDER.

Department of Agriculture,
Sydney.

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VEGETABLESDISEASES CAUSED BY SCLEROTIUM ROLFSII:

Over the past few weeks, Sclerotium rolfsii has been seen damaging beans and other vegetables at several places in the Sydney Metropolitan Area, at Wyong and at Kyogle. It was reported for the first time in New South Wales on snake bean (Vigna sesquipedalis) at Baulkham Hills.

Weather conditions at present appear to be very favourable for the development of this fungus, its optimum temperature for growth being about 30°C (86°F). With the present dry conditions, watering of the affected crops would probably have been heavy enough to provide enough moisture for growth but not heavy enough to interfere with the good soil aeration which this fungus requires. In all cases, plants scattered throughout the crop were attacked, usually at the crown, although the plants from Kyogle were attacked for a considerable distance up the stem.

The sclerotia of Sclerotium rolfsii require good aeration for germination and only germinate at or just under the surface of the soil. Those lower down remain dormant or, if they are buried more than 5-6" in moist soil lose their viability after about six weeks. Deep ploughing may thus help in controlling this disease.

- J. WALKER

Department of Agriculture,

Sydney.

BLACK RING DISEASE OF CRUCIFERS:

Reference was made previously in this publication (A.P.D.R. 9 3:17) to the occurrence of a disease suspected of being black ring disease on broccoli, cabbage and cauliflower at Dundas in the Sydney Metropolitan Area. Tests since carried out have confirmed that the virus concerned falls into the turnip virus 1 group (Pound & Walker, J. agric. Res. 71, 6: 255-278, 1945). Reactions produced by sap inoculation to Nicotiana tabacum, N. glauca, and Chenopodium album were identical with those described for the turnip mosaic virus and the thermal inactivation point lies between 55° and 60°C. Symptoms produced by inoculation to cauliflower, cabbage and turnip were also confirmatory for the turnip virus 1 group.

It is considered that the virus has been present here for some time but has passed unnoticed until a particularly susceptible variety of broccoli was grown. A mosaic disease of annual stock has been present for many years but it is considered that this is caused by a virus distinct from that found at Dundas, as the vector of stock mosaic (Brevicoryne brassicae) is very common and overseas work indicates that stock mosaic does not infect the cruciferous vegetables.

- R.J. CONROY

Department of Agriculture,

Sydney.

PEAR SCAB:Eradicant sprays

following on the work by Hutton in New South Wales with phenyl mercury chloride sprays for suppressing perithecial development of Venturia inaequalis in overwintering apple leaves (A.P.D.R. 6, 1:7, 1954 and 7, 1:7, 1955), investigations were undertaken in Western Australia on the closely related pear scab disease caused by V. pirina.

In the autumn of 1956, a phenyl mercury (P.M.C) spray, at 0.1% strength, was applied to 12 pear trees, moderately affected with scab, in an isolated orchard at Dwellingup, 65 miles south of Perth. The spray was applied on April 24th, by which time considerable leaf fall had occurred. It was not possible to contact with spray all fallen leaves on the orchard floor. Sprayed leaves collected from the trees and overwintered at Perth produced a few perithecia but no ascospores were detected.

The following spring there was no evidence of the disease until just after petal fall, when scab lesions were detected on a very few leaves and fruits. Captan, at 2lbs -100 gallons, was then applied twice to check the disease.

The autumn experiment was repeated last year at Dwellingup and, in addition, the P.M.C. spray was applied to 3 severely scabbed trees in another isolated orchard at Bedfordale, 27 miles south-east of Perth. The P.M.C. spray was applied at both locations at the end of March and caused complete defoliation within a day or two of spraying.

When last inspected on January 8th, the 12 trees at Dwellingup were completely free of scab, and on the 3 trees at Bedfordale, scab lesions had just become apparent on 4 leaves only. No spring sprays have been applied at either property.

Unsprayed scabbed leaves, collected in March last year from the trees at Bedfordale, developed perithecia and ascospores in the spring.

PEAR SCAB (Cont'd)Spring sprays.

During the past 4-5 years, a number of organic fungicides have been tested on pears in spring spray schedules for scab control. Results of experiments have shown captan and weak strength phenyl mercury sprays to be superior to thiram and ziram. Best results were obtained last season (1956-57) with a mixture of captan ($1\frac{1}{4}$ lbs - 100 gallons), and phenyl mercury (nitrate or chloride) at half strength. The phytotoxic effects of mercury sprays on various pear varieties are being studied. At present mercury compounds are not recommended for use after petal fall.

- W.P. CASS SMITH

&

R.F. DOEPEL

Department of Agriculture,

PERTH.

CERATOCYSTIS NARCISSI (LIMBER) HUNT ON DAFFODIL BULBS:

A study of an unidentified disease of daffodils was carried out by the author at the University of Sydney during 1957 as part of an honours course in Plant Pathology.

Diseased bulbs were collected at Mount Wilson in 1956 and a fungus, seen colonising the outer bulb scales, was isolated and cultured.

In subsequent experiments fruiting structures were produced on inoculated bulbs but not in culture.

The pathogen was identified as Ophiostoma narcissi Limber (Phytopathology, 40, 5: 493-496, 1950), which was later renamed Ceratocystis narcissi (Limber) Hunt by Hunt, who revised the taxonomy of the genus Ceratocystis (Lloydia, 19: 1-59, 1956).

Conidia are hyaline and produced in a slime mass on the apex of a tapering, black conidiophore.

Perithecia are black, spherical and glabrous with characteristic elongate beaks. Globose asci within the perithecium break down and the ovate ascospores are discharged in a mass.

The dimensions of the fruiting structures are given in the table.

Structure	Measurement (in u)	
	Length	Breadth
Conidium	4 - 6	1.5 - 2.5
* Conidiophore	2 - 50	1 - 2
Perithecial Beak	150 - 400	12 - 15
Perithecium		150 - 200
Ascospore	2 - 4	2 - 2.5
* Conidiophore tapers to 0.8 u at the apex.		

The fungus readily colonises the outer bulb scales when given a suitable food base, and spread inwards causes a collapse and decay of bulb tissue.

CERATOCYSTIS NARCISSI (LIMBER) HUNT DAFFODIL BULBS: (Cont'd)

Ornamental bulbs such as tulip, jonquil, hyacinth and also onions are readily colonised. The fungus spreads over the surface of the scales of ornamental bulbs but distinct lesions are formed on onion.

In many cases infection by Ceratocystis paved the way for secondary infection by soft rotting organisms. This may be the reason for the failure of pathologists to recognise Ceratocystis as a pathogen, although it has been observed on imported bulbs in the U.S.A. since 1934.

This is apparently the first record of this disease in Australia.

- JOHN A. PEARMAN.

Department of Agriculture,
SYDNEY.

STRAWBERRY VEIN - BANDING VIRUS:

In Victoria, a virus which produces symptoms on a runnerless strain of the Alpine variety of Fragaria vesca identical with those of Frazier's vein banding virus, has been isolated from heat-treated strawberries. To date the virus has been transferred only from the Ettersburg 89 variety.

Plants of this and other varieties were exposed to heat treatment in a well insulated cabinet with a glass roof. Thermostatic control and two continuously operating fans kept the temperature of the cabinet within 1° F. of the desired setting.

Twenty-one Ettersburg plants survived a treatment of 98°F. for ten days. Eight survived an additional exposure for eleven days at 101°, six for twelve days and three for sixteen days at 100°F.

During the past six months these plants have been indexed several times by leaf-grafting on to seedling Alpine plants, and another seedling strain of F. vesca which reacts to strawberry viruses in a similar manner to the East Malling clone of F. vesca.

Distinct vein banding sometimes accompanied by leaf curling symptoms appeared on both varieties grafted from all heat-treated plants. The presence of leaf curl suggests that either strawberry latent or strawberry crinkle virus (virus 3) was also present. All three viruses are not inactivated, or are very resistant, to temperatures which readily inactivate group 1 viruses.

Vein banding has not been isolated from similarly treated plants of the varieties Tardive de Leopold and Melba. However, post-treatment indexing revealed the presence of crinkle and mild yellowedge viruses singly or in combination in these varieties. The absence of vein banding is somewhat puzzling as both varieties have been grown in contact with Ettersburg for many years.

A possible explanation would be that local strains of Pentatrichopus fragariae are unable to transmit this virus. In California N.W. Frazier reported very erratic transmission until he discovered that some colonies of aphids, collected in different localities, transmitted efficiently, whereas others failed to transmit.

STRAWBERRY VEIN-BANDING VIRUS: (Cont'd)

Transmission experiments are now in progress with a local clone of P. fragariae, which transmits strawberry crinkle virus more efficiently than other clones which have been tested, and a mixed colony of the same species which was collected recently in Queensland.

- L.L. STUBBS

Department of Agriculture,
MELBOURNE.

SOME NEEDLE-CAST FUNGI FOUND IN THE ACT.:

The occurrence of Lophodermium pinastri (Schrad. ex Fr.) Chev. on Pinus spp. in Australia was first recorded by C.C. Brittlebank in his Catalogue of Australian Fungi, and Miss H. Purnell has recently recorded this fungus on Pinus ponderosa, P. laricio, and P. radiata in Victoria. Forests Commission of Victoria Plantation Technical Papers 2, : 2-3, 1956). In addition, L. pinastri has now been identified on ten different pine species in the A.C.T.

On P. ponderosa and P. apachea a Lophodermium sp. occurs which differs considerably from L. pinastri. The hysterothecia are strictly subepidermal, black stromatic marginal lines are absent, and the spores are smaller. So far, this is the only Lophodermium species found on P. ponderosa planted in the drier areas of the A.C.T. The other subepidermal types of Lophodermium reported in the literature on Pinus spp. are L. durilabrum Darker (Contrib. Arnold Arboretum 1, 1932), which in parts is subhypodermal, and L. pinicolum Tehon, Illinois biol. Monogr. 13, 4, 1935), which differs in size and form of ascospores and the presence of black stromatic lines.

Of the subcuticular types, L. nitens Darker is present on P. strobus and P. monticola, and on Juniperus communis, L. juniperinum (Fr.) de Not. has been found. Hypoderma desmazierii Duby, which has intraepidermal hysterothecia, is present on P. monticola planted in the Reid Pinch South Arboretum, and Naemacyclus niveus (Pers. ex Fr.) Sacc. is widespread on pines. Two forms of the latter fungus are present. One has oblong ascocarps, 0.5-1 x 0.25-0.3 mm., and mature ascospores were found, measuring 75 x 2-3 μ , and with up to three cells. The other form has more rounded ascocarps and appears to be more pathogenic. The ascocarps are smaller and measure 0.13-0.15 x 0.15-0.20 mm. Most of the mature spores are very irregular, bent, and twisted when expelled. Only two spores longer than 75 μ were encountered and spores were up to 5-septate.

Epidemic needle-cast has not been observed in the A.C.T. but it is believed that the brown, unhealthy appearance of some pine plantations is connected with these fungi.

- W. STAHL

CHENOPODIUM AMARANTICOLOR SUSCEPTIBLE TO BEAN YELLOW MOSAIC VIRUS:

Though it was not reported by Hollings (Plant Pathology 5,2:57-60) Chenopodium amaranticolor produces local lesions when inoculated with bean yellow mosaic virus. Relatively large (2-4 mm) local lesions are produced in six days. Pre-inoculation darkening had no effect on susceptibility. A greater number of more prominent local lesions are produced if plants are placed under artificial lights giving an intensity of approx. 600 fc. 18 hours a day at a temperature of 25-27°C.

The only virus found to systematically infect C. amaranticolor is the tomato streak strain of tobacco mosaic virus.

- N. CROWLEY

Waite Institute,

ADELAIDE.

Though it was not reported by Holman (1954) that
2,575-50) (2,575-50) (2,575-50) (2,575-50) (2,575-50)
insects with 1-2 mm wings were found. (2,575-50)
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had no effect on the insects. (2,575-50)
more common local insects are present if they are found.
under artificial lights giving an intensity of 100-150 ft.
to form a 1-2 mm wings of 2-3 mm.

The only other found to be occasionally present
insects in the same area of New York State.

REFERENCES

Holman, 1954.
New York State.

FURTHER HOSTS FOR EUTYPA ARMENIACAE:

Perithecial fructifications of E. armeniacae on dead wood of Vitis vinifera were reported during 1957 (M.V. Carter, A.P.D.R. 9, 3: 29): subsequent investigations however do not support the view that the fungus is a primary pathogen on this host.

Specimens of severely cankered apple limbs from an orchard at Lenswood in the Adelaide hills have on several occasions yielded cc cultures of E. armeniacae which are fully pathogenic when ~~inoculated~~ to apricot. When inoculated to apple limbs, the latter cultures fail to produce symptoms indicative of active pathogenicity. No fructifications of the fungus have yet been found on dead apple wood.

During November 1957, a specimen of dead tamarisk wood was submitted by the Department of Agriculture from Light Pass in the Barossa Valley, S.A. Single ascospore isolates from fructifications on this specimen have given rise to cultures which are indential with E. armeniacae and which are fully pathogenic to apricot.

It now seems likely that E. armeniacae may have quite a wide host range as a saprophyte or hemi-parasite; this will complicate control measures and make it much more difficult to eradicate the pathogen from apricot orchards in the absence of a source of field resistance.

- M.V. CARTER

Waite Institute,

ADELAIDE.

WESTERN HOSTS FOR THE BACTERIA

Perithecial fructifications of *E. granulosus* on dead wood of *Ulmus* were reported during 1937 (L. L. Carter, A. D. E. 8, 3: 29). Subsequent investigations however do not support the view that the fungus is a primary pathogen on this host.

Specimens of heavily colonized *Ulmus* found from an orchard at Llanwrda in the Alesia hills have on several occasions yielded conidia of *E. granulosus* which are fully pathogenic when inoculated to *Ulmus*. When inoculated to apple limbs, the latter cultures fail to produce symptoms indicative of active pathogenicity. No fructifications of the fungus have yet been found on dead apple wood.

During November 1937, a specimen of dead *Ulmus* wood was submitted by the Department of Agriculture from Llanwrda in the Brecon Valley, S.W. Single ascospores isolated from fructifications on this specimen have given rise to cultures which are identical with *E. granulosus* and which are fully pathogenic to *Ulmus*.

It now seems likely that *E. granulosus* may have quite a wide host range as a saprophyte or semi-parasite; this will complicate control measures and make it much more difficult to eradicate the pathogen from orchards in the absence of a source of field resistance.

- E. V. CARTER

Waise Institute,
WELLS.